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57. The method according to claim 56, wherein the determination step includes the step of determining the command on the basis of storage information which defines in advance a relationship between the action of the user and the corresponding command.

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58. The method according to claim 57, wherein the object to be controlled displays an image corresponding to the command.

REMARKS

Applicant requests favorable reconsideration and allowance of this application in view of the foregoing amendments and the following remarks.

Claims 1-58 are pending in this application, with Claims 1, 14, 18, 29, 30, 45, and 52 being independent.

Claims 1, 14, 18, 29, and 30 have been amended. Applicant submits that support for the amendments can be found in the original disclosure, and therefore no new matter has been added.

Claim 30 was rejected under 35 U.S.C. §112, second paragraph, as allegedly being indefinite due to the use of “CG.” Without conceding the propriety of the rejection, that claim has been amended to recite “computer graphics” in lieu of –CG–. Applicant submits that this amendment obviates the Examiner’s objection, and therefore Applicant requests reconsideration and withdrawal of the rejection.

Claims 1-11, 14-26, 29-38, and 41-58 were rejected under 35 U.S.C. §102 as being anticipated by U.S. Patent No. 5,846,134 (Latypov). Claims 12, 27, 28, 39, and 40 were rejected under 35 U.S.C. §103 as being obvious over Latypov. Applicant respectfully traverses those rejections for the reasons discussed below.

As set forth in Claims 1, 18, and 29 the present invention includes the feature of analyzing an action of a user on the basis of a relative position of a second portion of the user with respect to a first portion of the user, which positions are detected by first and second sensors. As recited in Claim 14, the present invention includes the feature of estimating an action of a player on the basis of a change of a relative location/posture of the hand or arm of the player with respect to the location/posture of the player's head, which locations/postures are detected by first and second sensors. As recited in Claim 30, the present invention includes the feature of determining a command a player wants to input by analyzing a change of a relative position of a second portion of the player with respect to a first portion of the player, which positions are detected by first and second sensors. As recited in Claims 45 and 52, the present invention includes the feature of analyzing outputs from first and second sensors (or detection steps) relating to location or motion of first and second portions of a user and determining a command input by the user on the basis of patterns of the outputs.

* Due to the above-mentioned features, in the present invention as recited in
Claims 1, 14, 18, 29, 30, 45, and 52 a command corresponding to a user's action can be
determined based on a change in the relative positions between a plurality of portions of

the user. Applicant submits that the cited art fails to disclose or suggest at least the above-mentioned features.

Latypov discloses an apparatus for immersion into virtual reality. The apparatus comprises a sphere-like closed shell 4 supported by ball supports 6, which is capable of free rotation. The apparatus detects a magnitude and direction of movement of the user 3 relative to the shell 4 and continuously converts the virtual space and displays it to the user. See Column 6, lines 44-47. Latypov further discloses a plurality of sensors 10 and 13-16 mounted on the user to determine the positions of the hands, feet, head, and body of the user. However, Applicant submits that Latypov does not disclose or suggest determining an action of a user on the basis of the relative positions of different portions of the user, but instead that patent only discloses determining the magnitude and direction of movement of the user relative to the shell.

Claims 1-11, 13-26, 28-38, and 40-58 were rejected under Section 102 as being anticipated by U.S. Patent No. 5,913,727 (Ahdoot). Claims 12, 27, and 39 were rejected under Section 103 as being obvious over Ahdoot. Applicant respectfully traverses those rejections for the reasons stated below.

The present invention recited in Claims 1, 14, 18, 29, 30, 45, and 52 includes features as discussed above, which allow a command corresponding to a user's action can be determined based on a change of relative positions of a plurality of portions of a user. Applicant submits that Ahdoot fails to disclose or suggest at least the above-mentioned features.

Ahdoot discloses an interactive movement and contact simulation game which allows a physical contact sport to be enacted between a player and a computer-generated three-dimensional moving image. That patent discloses a plurality of sensors 30 to detect positions of a player's hands, feet, and head, as well as a plurality of inertial sensors 46 to determine whether a movement of a hand/foot is a kick/punch. The game apparatus of Ahdoot can form a simulated full body stance, position, posture, and dynamic motion approximation of the player based on the positions of the sensors, and changes to the image are displayed on a display means 20. However, that apparatus does not determine a command or user instruction based on relative positions between plural portions of the player, but instead only detects or approximates the player's action itself.
~~Accordingly, that apparatus can only simulate the action and cannot generate any instruction represented by an action of the player. Accordingly, that patent fails to disclose or suggest at least the above-mentioned features.~~

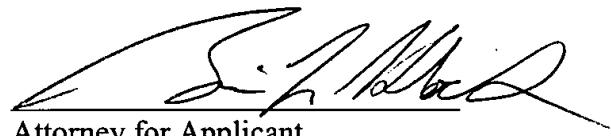
In view of the foregoing, Applicant submits that the present invention recited in Claims 1, 14, 18, 29, 30, 45, and 52 is patentable over the cited art.

Dependent Claims 2-13, 15-17, 19-28, 31-44, 46-51, and 53-58 recite additional features that further distinguish the present invention from the cited art. Further individual consideration of the dependent claims is requested.

For the foregoing reasons, Applicant submits that this application is in condition for allowance. Favorable reconsideration, withdrawal of the rejections set forth in the above-mentioned Office Action, and an early Notice of Allowance are requested.

Applicant's undersigned attorney may be reached in our Washington, DC office by telephone at (202) 530-1010. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,



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APPENDIX

MARKED-UP VERSION SHOWING AMENDMENTS TO CLAIMS

1. (Amended) A user interface apparatus comprising:

a first sensor attached to a first portion of a body of a user;

a second sensor attached to a second portion of the user, which is different

from the first portion;

means for analyzing an action of the user [generating action information of the second portion] on the basis of a relative position of the second portion with respect to the first portion, which is detected by said first and second sensors, and for generating action information corresponding to the action of the user; and

determination means for determining a user instruction corresponding to the generated action information.

14. (Amended) A game apparatus comprising:

a first sensor for detecting a location/posture of a head of a player;

a second sensor for detecting a location/posture of a hand or arm of the player;

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means for estimating an action of the player on the basis of a change of a relative location/posture of the hand or arm with respect to the location/posture of the head, which are detected by said first and second sensors; and

means for outputting a player command corresponding to the estimated action.

18. (Amended) A user interface method for outputting a user instruction to a predetermined apparatus or program, comprising:

the step of detecting a location of a first portion of a body of a user and a location of a second portion of the user, which is different from the first portion, by using first and second sensors attached to the user; and

the step of determining a user instruction by analyzing an action of the user on the basis of a relative position of the second portion with respect to the first portion, which are detected by said first and second sensors, and outputting the determined user instruction to the apparatus or program.

29. (Amended) A computer readable storage medium, which stores a program of a user interface method for outputting a user instruction to a predetermined apparatus or program, storing:

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a program step of detecting a location of a first portion of a body of a user and a location of a second portion of the user, which is different from the first portion, by using first and second sensors attached to the user; and

a program step of determining a user instruction by analyzing an action of the user on the basis of a relative position of the second portion with respect to the first portion, which are detected by said first and second sensors, and
outputting the determined user instruction to the apparatus or program.

30. (Amended) A game apparatus for displaying a computer graphics [CG] image in front of a field of view of a player, comprising:

a first sensor for detecting a location of a first portion of a body of the player;
a second sensor for detecting a location of a second portion of the player, which is different from the first portion; and
game progress means for proceeding with a game by determining a command the player wants to input by analyzing a change [on the basis] of a relative position of the second portion with respect to the first portion, which are detected by said first and second sensors, and executing the determined command.

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